

Notice of Allowability

Application No.

10/073,427

Examiner

Matthew J. Sked

Applicant(s)

CHU ET AL.

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/17/05.
2. ☒ The allowed claim(s) is/are 1-14, 16-26, 30 and 31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

W. R. YOUNG
PRIMARY EXAMINER

DETAILED ACTION

Response to Amendment

1. The double patenting rejection is withdrawn in view of the Applicant's arguments filed 8/17/05.
2. The objection to claims 14-16 and 24-27 is withdrawn in view of the amendments filed 8/17/05.
3. The rejection to claims 1, 2-9 and 19 under 35 USC 112 is withdrawn in view of the amendments filed 8/17/05.
4. Applicant's arguments, filed 8/17/05, with respect to claims 1 and 19 have been fully considered and are persuasive. The rejection of claims 1-29 has been withdrawn.
5. Claims 15 and 27 have been cancelled.
6. Claims 30 and 31 have been newly added.

Allowable Subject Matter

7. Claims 1-14, 16-26, 30 and 31 are allowed.
8. The following is an examiner's statement of reasons for allowance: Claims 1 and 19 both include the combination of generating a set of synthesized utterance from text, rating the utterances subjectively, calculating an objective score for each utterance where the score is a function of the text used to form the utterance, determining a relationship between the objective scores and the subjective ratings and using the relationship to estimate the naturalness of synthesized speech.

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9. Kitawaki et al. ("Objective Quality Evaluation for Low-Bit-Rate Speech Coding Systems") teaches a method for estimating naturalness (quality) of synthesized speech, wherein naturalness is a subjective quality of synthesized speech (a subset of the intelligibility, unintelligible speech not being natural), the method comprising:

generating a set of synthesized utterances (generation of artificial voice, pages 244 and 245);

subjectively rating utterances (subjectively evaluates the speech using both MOS and Qop, page 243);

calculating a score for each of the synthesized utterances using an objective measure (calculates the LPC cepstrum distance from the cepstrum coefficients, page 242);

ascertaining a relationship between the scores of the objective measure and subjective ratings of the synthesized utterances (compares subjective and objective scores, page 245); and

using the relationship to estimate naturalness of synthesized speech (uses this comparison to determine how well the synthesized speech reflects the characteristics of real speech, page 245).

10. Hardy (U.S. Pat. 6,370,120) teaches ") teaches a method for estimating naturalness (quality) speech, wherein naturalness is a subjective quality of speech the method comprising:

subjectively rating utterances (subjectively evaluates the voice signal, col. 6, lines 21-46);

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calculating a score for each of the voice signals using an objective measure (calculates objective characteristics, col. 5, lines 54-64);

ascertaining a relationship between the scores of the objective measure and subjective ratings of the synthesized utterances (maps the objective characteristics to the subjective evaluations, col. 6, lines 5-20 and col. 7, lines 1-14); and

using the relationship to estimate naturalness of synthesized speech (transforms the objective measure of the voice signal into subjective measure to evaluate the voice on the channel, col. 8, lines 11-28).

11. None of the prior art on record teaches the objective score being a function of textual information used to form the utterance. It would not have been obvious to one of ordinary skill in the art at the time of invention to modify the systems of Kitawaki and Hardy to arrive at the Applicant's invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hagen et al. ("Voicing-Specific LPC Quantization for Variable-Rate Speech Coding") and Bou-Ghazale et al. ("HMM-Based Stressed Speech Modeling with Application to Improved Synthesis and Recognition of Isolated Speech

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Under Stress") both teach evaluating synthesized speech using both objective and subjective scores. Wu et al. ("A Distance Measure for Objective Quality Evaluation of Speech Communication Channels Using Also Dynamic Spectral Features") teaches creating a mapping between objective and subjective evaluations to determine the naturalness of the speech over a communication channel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Sked whose telephone number is (571) 272-7627. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



W. R. YOUNG
PRIMARY EXAMINER

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11/02/05